Cell Nucleus

Control center of the cell

- Nuclear envelope
  - Porous double membrane
  - Separates nucleoplasm from cytoplasm
- Nucleolus
  - Dense collection of RNA and proteins
  - Site of ribosome production
- Chromatin
  - Fibers of DNA and proteins
  - Stores information for synthesis of proteins

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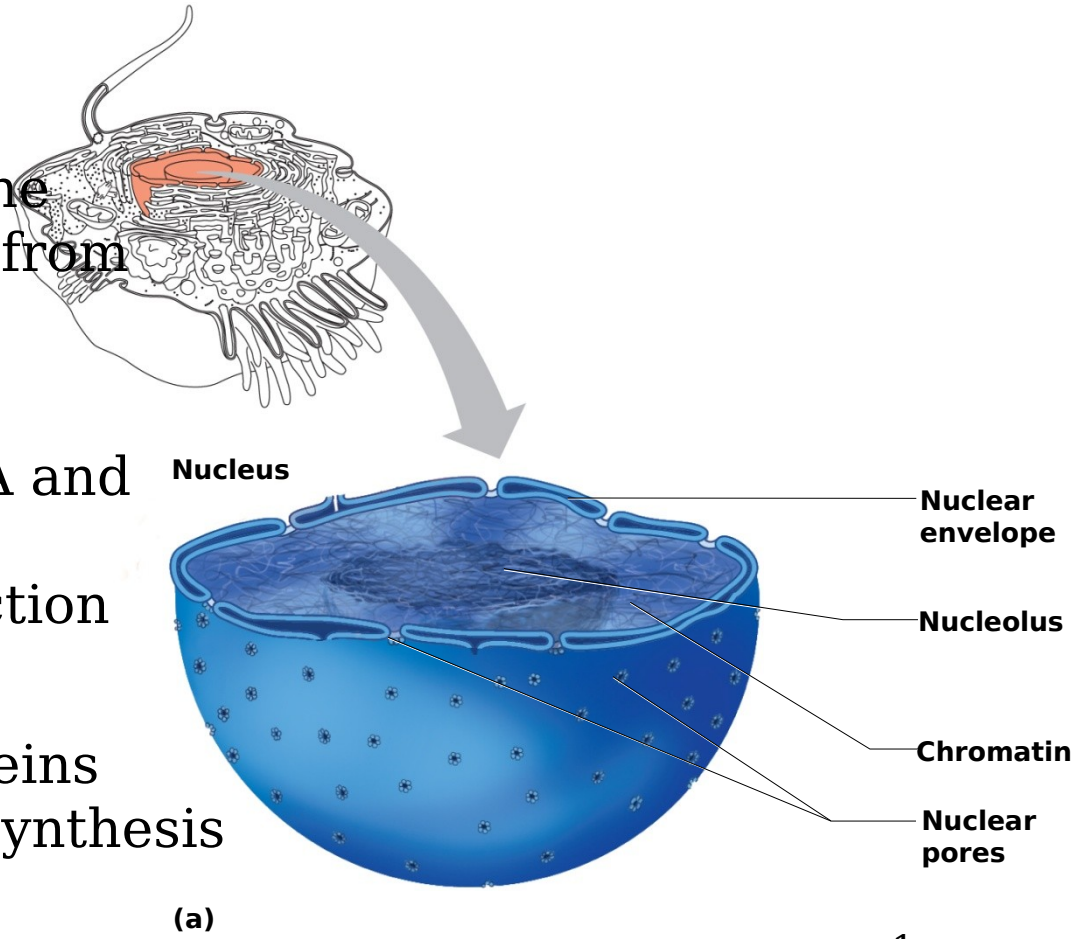

3.3: Movements Into and Out of the Cell

Passive (Physical) Processes

- Require no cellular energy and include:
  - Simple diffusion
  - Facilitated diffusion
  - Osmosis
  - Filtration

Active (Physiological) Processes

- Require cellular energy and include:
  - Active transport
  - Endocytosis
  - Exocytosis
  - Transcytosis

Simple Diffusion

- Movement of substances from regions of higher concentration to regions of lower concentration
- Oxygen, carbon dioxide and lipid-soluble substances

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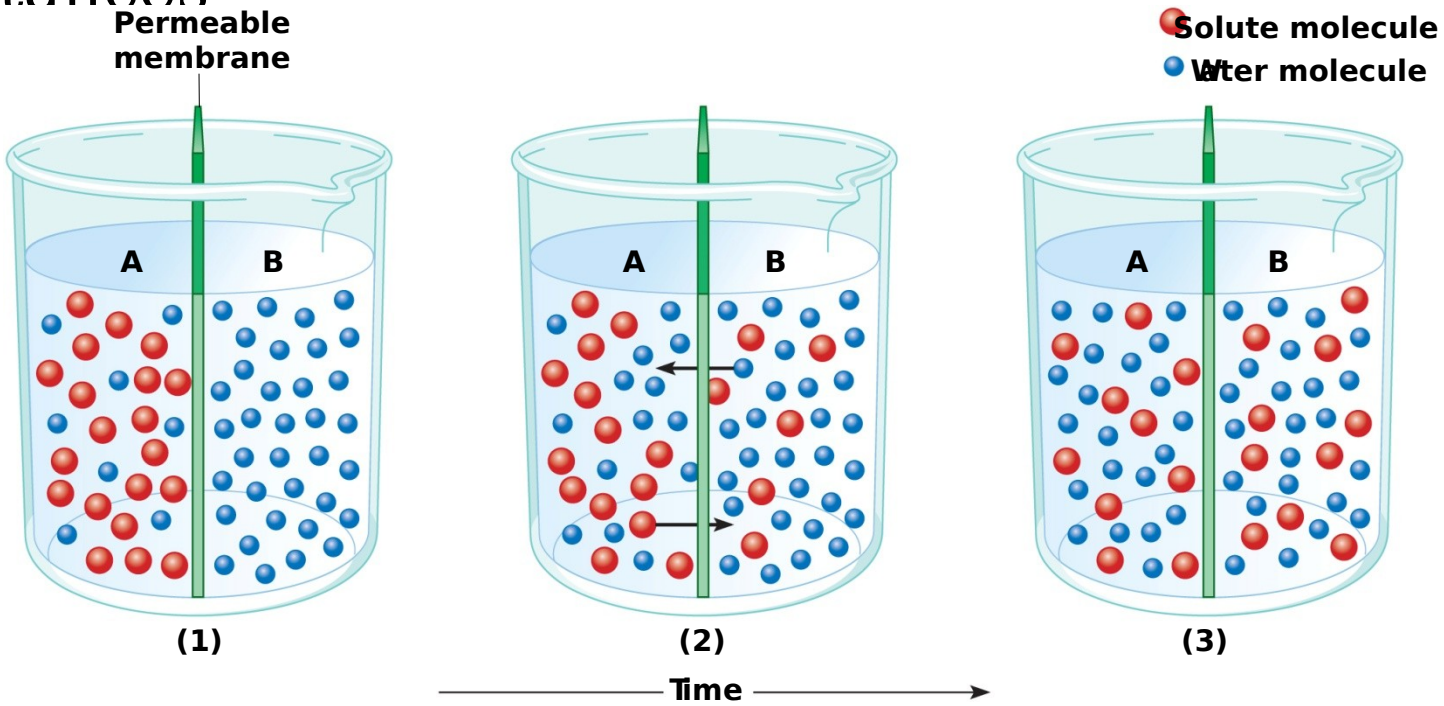

Animation: How Diffusion Works

How Diffusion Works
Play
Pause
Audio
Text
Molecules dissolved in a solution are in constant random motion due to their kinetic energy. One result of this motion is that dissolved molecules become evenly distributed throughout the solution.
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Facilitated Diffusion

- Diffusion across a membrane with the help of a channel or carrier molecule
- Glucose and amino

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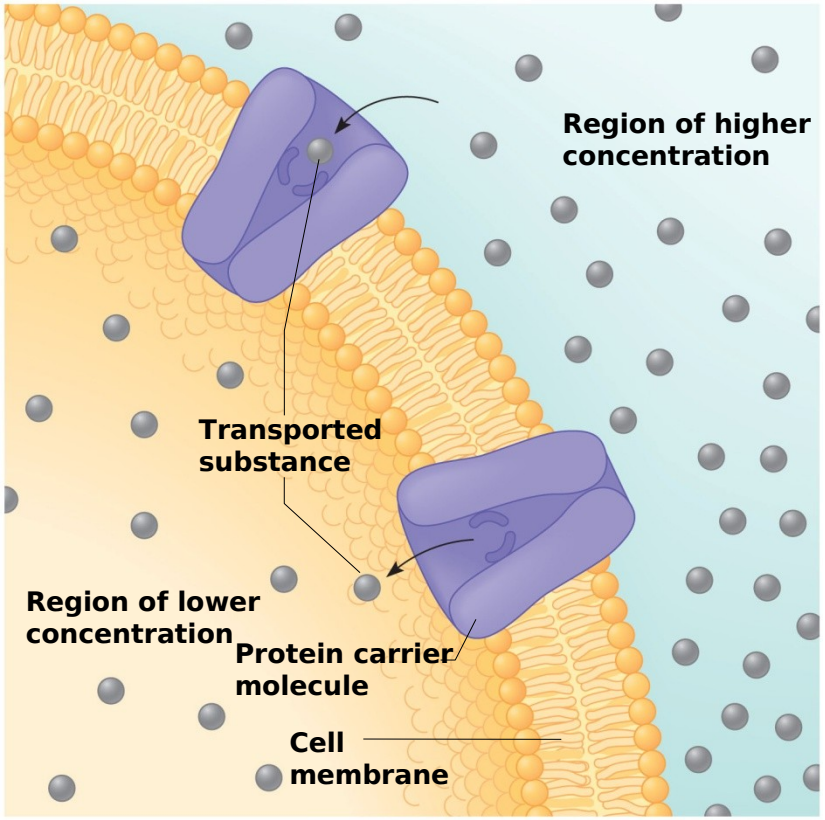
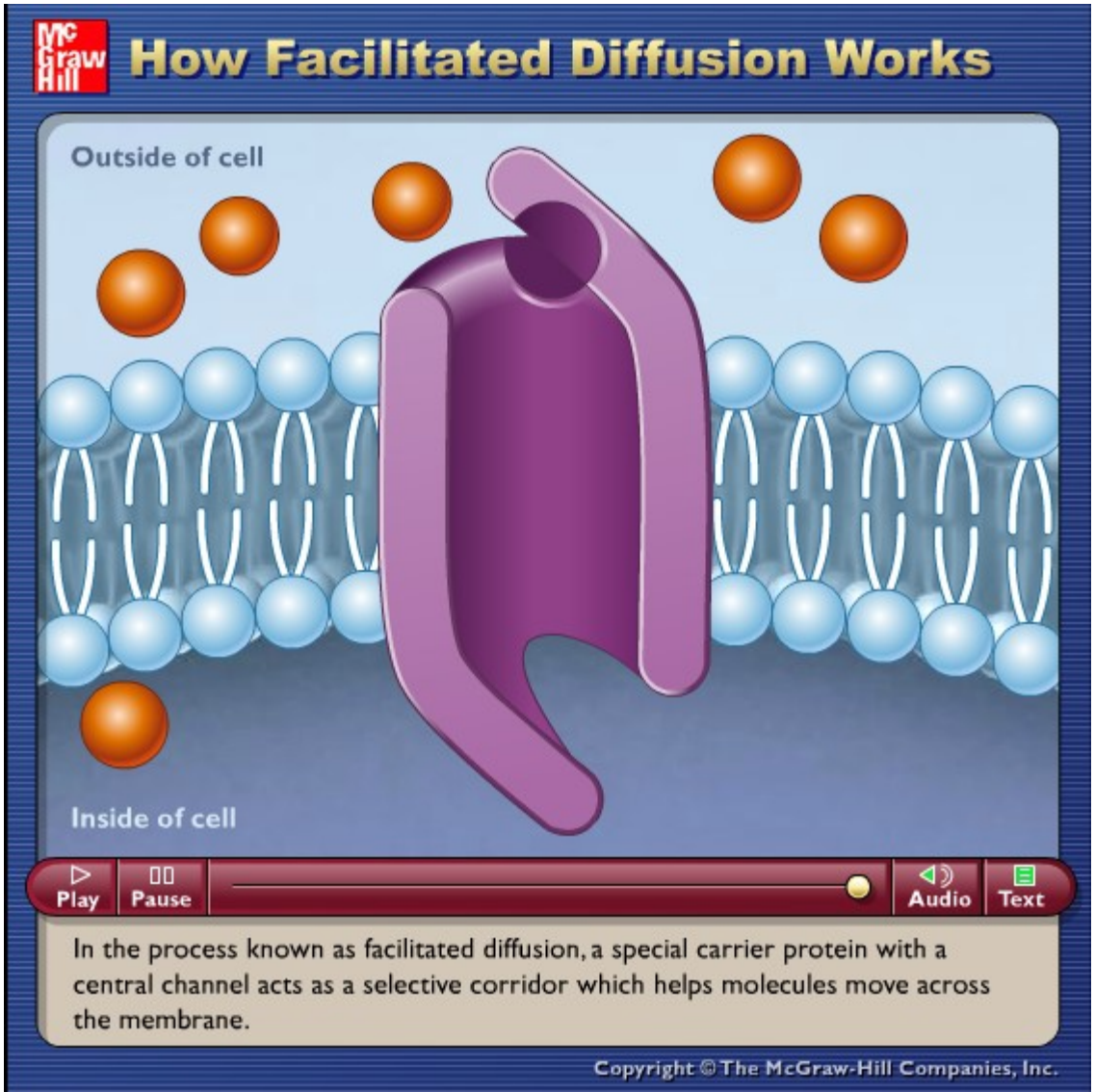


Animation: How Facilitated Diffusion Works


How Facilitated Diffusion Works
Outside of cell
Inside of cell
Play
Pause
Audio
Text
In the process known as facilitated diffusion, a special carrier protein with a central channel acts as a selective corridor which helps molecules move across the membrane.
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